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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,593	02/14/2002	Yinan Wu	10559-684001 / P13288	1555
20985	7590	12/18/2003	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			VIGUSHIN, JOHN B	
			ART UNIT	PAPER NUMBER
			2827	
DATE MAILED: 12/18/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/077,593	<b>Applicant(s)</b> WU ET AL.	
	<b>Examiner</b> John B. Vigushin	<b>Art Unit</b> 2827	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 16-26 is/are rejected.
- 7) ☒ Claim(s) 8-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
     a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0903</u> | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

**Rejections Based On Prior Art**

1. The following references were relied upon for the rejection hereinbelow:

Osaka et al. (US 2002/0018526 A1)	Ishibashi et al. (US 6,163,464)
Marketkar et al. (US 2001/0024888 A1)*	Mattingly, Jr. et al. (US 3,673,548)
Benham et al. (US 6,573,801 B1)	

\*Made of record in Applicant's IDS filed September 02, 2003.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5, 6, 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Osaka et al.

As to Claim 1, Osaka et al. discloses, in Fig. 15: a connector configured for insertion and removal of a digital device (memory module 2-2); the connector having contacts (not shown) arranged to make electrical connection to conductors--i.e., portions of conducting path 1-2--on digital device 2-2 while digital device 2-2 is inserted in the connector (p.7: [0117] and the reference to "connector lead wiring" on p.7,

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[0118]); a first electromagnetic coupler (portion of conducting path 1-2 parallel to main line 1-1) configured for electromagnetic coupling C1 at an interface to a second electromagnetic coupler (main line 1-1) that is connected to a communication bus (the remainder of main line 1-1).

As to Claim 2, Osaka et al. further discloses the connector is a socket (Fig. 15 with pins not shown but referenced as "connector lead wiring" on p.7, [0118]).

As to Claim 3, Osaka et al. further discloses the socket is configured to receive memory card 2-2 (p.7, [0117]).

As to Claim 5, Osaka et al. further discloses the (connector) contacts are configured to carry signals to and from the chip 10-2 on the memory module 2-2 (p.7, [0117]; p.8, [0127]).

As to Claim 6, Osaka et al. further discloses the digital device 2-2 comprises a memory card (p.7, [0117]).

As to Claim 25, Osaka et al. discloses, in Figs. 15 and 16: mounting sockets on a circuit board 1 at locations of electromagnetic couplers C1, C2, C3, C4, and populating circuit board 1 with components that include a processor coupled to a bus served by the electromagnetic bus couplers (p.1, [0001]).

As to Claim 26, Osaka et al. further discloses inserting digital devices 2-2 to 2-7 into the sockets (Fig. 15; p.7, [0117]).

3. Claims 16-18 and 21-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Marketkar et al.

Examiner's Note: The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to Claim 16, Marketkar et al. discloses: a circuit board 300; a bus 112 arranged on circuit board 300 (p.3, [0047]); electromagnetic couplers (flex circuits 354 corresponding to plural sockets 700) defined at locations along the bus 112 (Figs. 2, 3, 13 and 14; p.3, [0044]; p.6, [0086]); base 710 of sockets 700 having electromagnetic couplers 354 and contacts 750, 760 for connection to contact pads 581-584 of device boards 352 (p.6, [0090]); the sockets 700 being mounted to define interfaces across which electromagnetic coupling of signals can occur between the electromagnetic couplers (lines 311 and 312) defined along bus 112 and the electromagnetic couplers 354 on sockets 700 (Figs. 2, 3 and 14; p.3, [0047]).

As to Claim 17, Marketkar et al. further discloses the sockets 700 are mounted to circuit board 300 by pins of connectors 750 and 760 (Figs. 14 and 17; p.7, [0093]).

As to Claim 18, Marketkar et al. further discloses each of sockets 700 has an electromagnetic coupler 354 for each of a set of signals carried by contacts 750, 760 in base 710 of sockets 700 (Figs. 2, 3 and 14; p.6, [0088]).

As to Claim 21, Marketkar et al. discloses: a circuit board 300; a bus 112 arranged on circuit board 300 (p.3, [0047]); electromagnetic couplers (flex circuits 354 corresponding to plural sockets 700) defined at locations along the bus 112 (Figs. 2, 3, 13 and 14; p.3, [0044]; p.6, [0086]); base 710 of sockets 700 having electromagnetic couplers 354 and contacts 750, 760 for connection to contact pads 581-584 of device boards 352 (p.6, [0090]); the sockets 700 being mounted to define interfaces across which electromagnetic coupling of signals can occur between the electromagnetic couplers (lines 311 and 312) defined along bus 112 and the electromagnetic couplers 354 on sockets 700 (Figs. 2, 3 and 14; p.3, [0047]; device boards 352 mounted in sockets 700 (Figs. 13 and 14).

As to Claim 22, Marketkar et al. further discloses the device boards 352 include memory devices (memory module boards 120, 130 and 140 of Figs. 1 and 2 are manifested in the device boards 352 of Figs. 3, 12 and 13; p.2, [0035] and p.3, [0046]).

As to Claim 23, Marketkar et al. discloses: conducting digital signals from memory devices 120, 130 and 140 along a bus 112; at locations along bus 112 (Figs. 1 and 2; p.2, [0035]), electromagnetically coupling the digital signals to sockets 700 (through electromagnetic couplers 160 comprising flex circuit 354 and bus lines 311, 312 of circuit board 300; Fig. 3 and p.3, [0047]); within the sockets 700, conducting the digital signals to contacts 750, 760, and conducting the signals from contacts 750, 760 to boards 352 plugged into sockets 700 (p.6, [0090]; p.7, [0091] and [0093]).

As to Claim 24, Marketkar et al. further discloses that the signals comprise memory address and data signals (p.2, [0035] and [0036]; p.6, [0093]).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka et al. in view of Mattingly, Jr. et al.

I. Osaka et al. discloses that the connector for digital device 2-2 has "lead wiring," i.e., the connector contacts, that penetrates the through holes in circuit board 1 (p.7, [0118]) but does not provide details of the "lead wiring."

II. The use of spring contacts in connectors (sockets) for receiving digital devices, such as the memory cards 2-2 of Osaka et al. (Fig. 15), are old and well-known in the art as an effective means of mounting modular cards to a circuit board such that the cards may be easily, quickly and securely mounted to the circuit board as required for various electronic applications, as taught, for example, by Mattingly, Jr. et al. (Figs. 1, 3 and 5; col.1: 35-37 and 63-68).

III. Therefore, it would have been obvious to one of ordinary skill in the art to modify the "lead wiring" (connector contacts for digital device module board 2-2) to comprise spring contacts in order to facilitate insertion of the module board and ensure good connection with the corresponding contact pads of the module board, as taught by Mattingly, Jr. et al.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka et al. in view of Ishibashi et al.

I. Osaka et al. discloses that digital device 2-2 is a memory module (p.7, [0117]) but does not teach a digital device comprising an I/O card.

II. Ishibashi et al. discloses a circuit board to which memory modules (cards), processor cards or I/O cards are mounted depending on the electronic function of the circuit board required by the application (col.3: 29-31).

III. Since both Osaka et al. and Ishibashi et al. mount modules onto a circuit board to perform a required electronic function, then it would have been readily recognized in the pertinent art of Osaka et al. that the circuit board mounted with a digital device providing memory to a system would also benefit from other digital devices other than a memory card, such as an I/O device for providing input/output functions required by an application, and benefiting from the increased speed in bus transmission by means of electromagnetic coupling between the bus line of the circuit board and the signal line of the I/O card (see Osaka et al., p.1, [0001]).

IV. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the memory card 2-2 of Osaka et al. with the I/O card of Ishibashi et al. in order to enable input/output device functions required by the system application, as taught by Ishibashi et al., with the enhanced bus transmission speed made possible by the electromagnetic bus coupling technique taught by Osaka et al.



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7. Claim 19 is rejected under 35 U.S.C. 103(a) as being obvious over Marketkar et al. in view of Benham et al.

Examiner's Note: The applied references have a common inventor and an apparent common assignee with the instant application. Based upon the earlier effective U.S. filing date of the references, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

1. Marketkar et al. discloses electromagnetic couplers 160, 170 and 180 (Figs. 1 and 2; p.2, [0032]), each comprising the coupling conductors 361, 362 on flex board 354 and the coupling conductors 311, 312 on circuit board 300 (p.3, [0046]), wherein the

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coupling conductors 361, 362 of flex board 354 and the corresponding coupling conductors 311, 312 on circuit board 300 are linear and parallel to each other.

Accordingly, Marketkar et al. do not teach that at least some of the electromagnetic couplers 160, 170 and 180 have a zig-zag configuration.

II. Benham et al. discloses mounting circuit cards to circuit boards and establishing signal connections therebetween and along a circuit board bus by means of electromagnetic couplers 1140 and 1141 (Fig. 11A; col. 6: 14-19), as does Marketkar et al, and further discloses that electromagnetic couplers of the type taught by Marketkar et al. (i.e., linear and parallel to each other) heavily depend on proper placement and mutual alignment within the circuit board, or else the capacitance between the respectively displaced coupling lines is inconsistent and out of the capacitance range constraints required to achieve optimal electromagnetic coupling. Moreover, Benham et al. teaches a solution to this displacement problem which comprises forming the electromagnetic couplers so that they have a zig-zag configuration, said zig-zag configuration not being sensitive to and dependent upon precise placement and mutual alignment of the respective coupling lines of the electromagnetic coupler, and thereby able to maintain a relatively constant coupling coefficient well within the predetermined design range (Fig. 1 with col.1: 25-38; Fig. 6A with col.3: 14-30 and col.4: 10-26).

III. Since Marketkar et al. are both in the same art of mounting circuit card devices to a circuit board using electromagnetic coupling to transmit signals along a circuit board bus, the identification and solution of the electromagnetic coupling problems caused by displacement and alignment defects in assembling the couplers in

the electronic system, as taught by Benham et al., would have been readily recognized in the pertinent art of Marketkar et al.

IV. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the linear and parallel configuration of the coupling conductors in the electromagnetic couplers of Marketkar et al. by replacing it with the zig-zag configuration of Benham et al. in order to enable a relatively constant electromagnetic coupling coefficient in the electronic system of Marketkar et al. by using the much less alignment-sensitive zig-zag configuration of Benham et al., hence, enhancing and ensuring optimal electromagnetic coupling performance in the electronic system of Marketkar et al., as taught by Benham et al.

8. Claims 20, 25 and 26 are rejected under 35 U.S.C. 103(a) as being obvious over Marketkar et al. in view of Ishibashi et al.

Examiner's Note: The applied reference has a common inventor and an apparent common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party

and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

A) As to Claim 20:

I. Marketkar et al. discloses circuit boards 352 mounted to a backplane circuit board 300 and electromagnetically coupled to bus 112 on circuit board 300 through sockets 700 and further discloses that the devices 120, 130 and 140 of Figs. 1 and 2 (manifested in the device boards 352 of Figs. 13 and 14) may, for example, be memory modules (p.2, [0035]) but does not teach boards 352, or any other circuit components that may also be mounted to backplane circuit board 300, as being a processor.

II. Ishibashi et al. discloses circuit boards 5a-f mounted to backplane board 1 through connectors 6a-f, wherein circuit boards 5a-f not only may include a memory board but also include a processor board (col.3: 29-31) for performing the data processing functions.

III. Since both Marketkar et al. and Ishibashi et al. disclose an electronic system wherein circuit boards that perform electronic functions are mounted to a backplane through connectors, then including a processor board among the functional boards for performing the data processing functions, as taught by Ishibashi et al., would have been readily recognized in the pertinent art of Marketkar et al.

IV. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount various types of functional boards to the bus on the backplane board in the electronic system of Marketkar et al., including a processor board, as taught by Ishibashi et al., for performing the data processing in the electronic system of Marketkar et al.

B) As to Claim 25:

I. Marketkar et al. discloses: mounting sockets 700 on a circuit board 300 at locations of electromagnetic bus couplers 160, 170, 180 (Figs. 1 and 2; p.2, [0032], [0035] and [0036]; p.3, [0046]; Figs. 13 and 14; p.6: [0086] and [0087]). Marketkar et al. also discloses circuit boards 352 mounted to a backplane circuit board 300 and electromagnetically coupled to bus 112 on circuit board 300 through sockets 700 and bus couplers 160, 170, 180, and further discloses that the devices 120, 130 and 140 of Figs. 1 and 2 (manifested in the device boards 352 of Figs. 13 and 14) may, for example, be memory modules (p.2, [0035]) but does not teach boards 352, or any other circuit components that may also populate circuit board 300, inclusive of a processor coupled to bus 112 served by the electromagnetic bus couplers 160, 170 and 180.

II. Ishibashi et al. discloses circuit boards 5a-f mounted to backplane board 1 through connectors 6a-f, wherein circuit boards 5a-f not only may include a memory board but also include a processor board (col.3: 29-31) for performing the data processing functions.

III. Since both Marketkar et al. and Ishibashi et al. disclose an electronic system wherein circuit boards that perform electronic functions are mounted to a backplane

through connectors, then including a processor board among the functional boards for performing the data processing functions, as taught by Ishibashi et al., would have been readily recognized in the pertinent art of Marketkar et al.

IV. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount various types of functional boards to the bus on the backplane board in the electronic system of Marketkar et al., including a processor board, as taught by Ishibashi et al., for performing the data processing in the electronic system of Marketkar et al.

C) As to Claim 26, Marketkar et al. further discloses inserting digital devices 352 (e.g., memory module boards; p.2, [0035]; p.3, [0046]) into sockets 700 (Figs. 13 and 14).

#### ***Allowable Subject Matter***

9. Claims 8-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

As to Claims 8-10, 12-15, patentability resides in the limitation wherein *the connector comprises a rigid coupling element, and the first electromagnetic coupler is formed on a surface of the rigid coupling element*, in combination with the other limitations of base Claim 8.

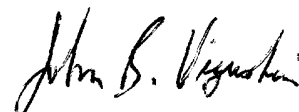
As to Claim 11, patentability resides in a *viscous liquid on the first electromagnetic coupler*, in combination with the other limitations of the claim.

**Conclusion**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Vigushin whose telephone number is 703-308-1205 (Crystal City campus) and 571-272-1936 (Carlyle campus). The examiner can normally be reached on 8:30AM-5:00PM Mo-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 703-308-1233 (Crystal City campus) and 571-272-1957 (Carlyle campus). The fax phone number for the organization where this application or proceeding is assigned is 703-308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



John B. Vigushin  
Primary Examiner  
Art Unit 2827

jbv  
December 14, 2003